Part 8 · Number Search & Magic Square

Work out each answer below, then find it hidden in the digit grid — across, down, diagonally or backwards.

1. LCM(6, 20)
2. Ex. 1.1 Q1(i) — express as a product of prime factors
3. Ex. 1.1 Q1(ii) — express as a product of prime factors
4. One of the two numbers whose HCF is 9
5. LCM(6, 72, 120)
6. The other number whose HCF (with 306) is 9
7. LCM(96, 404)
8. HCF(306, 657)

0	3	8	9	2	4	6	5	1	6	2	8	1	9
4	0	8	0	4	1	2	1	6	9	9	3	5	1
8	6	1	9	0	9	9	3	5	7	8	6	5	7
9	7	5	4	3	2	3	6	7	1	9	4	8	7
5	7	4	0	9	1	1	8	9	6	2	5	2	7
6	0	6	1	8	9	5	5	5	6	9	7	9	7
1	3	1	4	7	1	0	4	9	7	4	6	5	0
7	5	2	9	1	7	0	3	4	2	3	6	6	7
1	2	7	6	8	4	2	6	8	4	6	5	6	3
2	1	2	2	3	3	0	7	9	0	2	4	4	0
2	6	8	5	9	9	5	2	8	6	9	0	7	8
6	6	6	6	1	7	6	0	3	1	3	7	2	1
5	9	0	1	0	9	2	8	1	5	9	0	1	3
9	6	2	4	5	9	5	7	1	1	7	7	7	7

☐ 9696	☐ 140	☐ 156	☐ 306	☐ 360
☐ 657	☐ 60	☐ 9		

Magic Square — every row, column and diagonal adds to the same total.

8		
3	**5**	**7**

		2

Magic constant: 15. Fill the empty cells.

Concept Bingo

Fill the empty grid below with any 16 terms from the bank — in any order, one per box. Then work down the clue list: each clue describes one term without naming it. Cross off a box only when you are sure which term its clue is describing. Get four crossed in a row, column or diagonal and you have bingo.

Term bank — choose any 16:

Prime	Composite	Coprime	HCF
LCM	Factor Tree	Fundamental Theorem	Contradiction
Irrational	Rational	Euclid	Gauss
Divisor	Remainder	Prime Factorisation	Theorem 1.2
Unique Factorisation	Proof	Coprime Integers	Ascending Order

Your bingo card:

Clue list — read each clue and find the term it describes:

① I have exactly two factors: 1 and myself.
② I have more than two factors and can be split into primes.
③ Two numbers with no common factor other than 1 share this property.
④ The product of the smallest common prime powers of two numbers.
⑤ The product of the greatest prime powers appearing in either number.
⑥ A diagram used to break a number into its prime factors.
⑦ This theorem guarantees every composite number factorises uniquely into primes.
⑧ The logical dead-end that proves an assumption must have been false.
⑨ A number that cannot be written as p/q for integers p, q with $q \neq 0$.

⑩ A number that can be written as p/q for integers p, q with q ≠ 0.

 Ancient Greek mathematician behind the division algorithm.

 Mathematician who gave the first correct proof of the Fundamental Theorem of Arithmetic.

 A number that divides another exactly, with no remainder.

 What is left over after one number is divided by another.

Every proof in this chapter, from HCF to √2, comes back to one fact: primes factorise a number in exactly one way. Hold onto that, and the rest follows. □√2